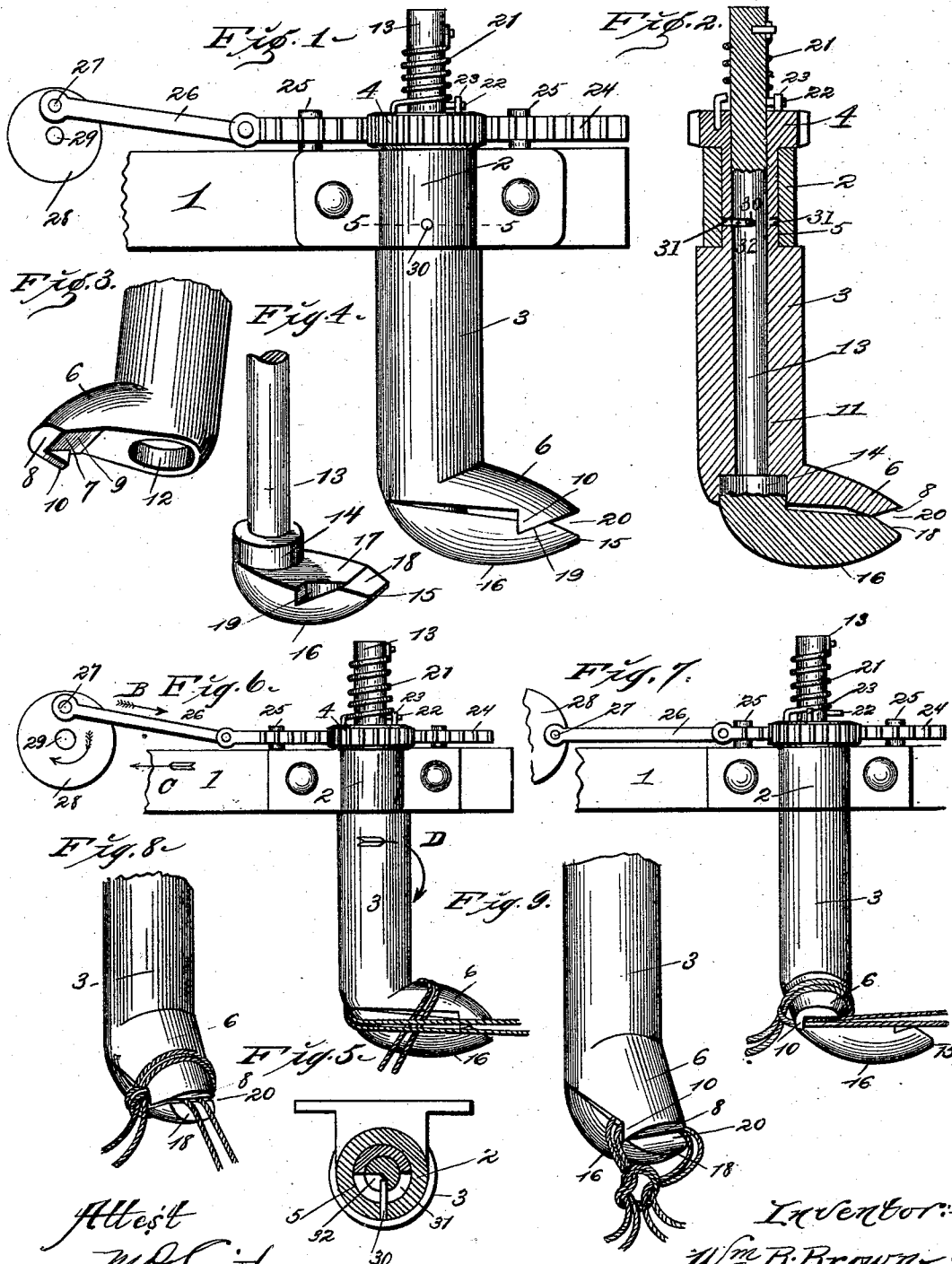


(No Model.)

W. B. BROWN.
KNOTTER FOR HARVESTERS.

No. 531,152.

Patented Dec. 18, 1894.



Attest
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UNITED STATES PATENT OFFICE.

WILLIAM B. BROWN, OF LABADDIE, MISSOURI, ASSIGNOR OF ONE-HALF TO
FRANK M. NORTH, OF SAME PLACE.

KNOTTER FOR HARVESTERS.

SPECIFICATION forming part of Letters Patent No. 531,152, dated December 18, 1894.

Application filed May 14, 1894. Serial No. 511,182. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. BROWN, of the city of Labaddie, Franklin county, State of Missouri, have invented certain new and useful Improvements in Knotters for Harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

10 The object of my invention is to provide an improved knotter for use in binding, or reaping, machines.

A further object of my invention is the production of such an improved knotting device as will be practically automatic in all its workings, complete in its results, and composed of but two main parts.

15 My invention consists in the novel construction, combination and arrangement of parts, hereinafter set forth and claimed.

In order that my invention may be more fully understood, I will now proceed to describe it, reference being had to the accompanying drawings, in which—

25 Figure 1 is a side elevation of the complete knotter in position as required for practical use, also the mechanism for operating said knotter. Fig. 2 is a vertical longitudinal sectional view of the knotter. Fig. 3 is a perspective view of the lower end of the sleeve and the beak formed integral therewith. Fig. 4 is a perspective view of the lower end of the arm with which the lower beak is integrally formed. Fig. 5 is a cross-sectional view on the line 5—5 of Fig. 1. Figs. 6, 7, 8 and 9 show the knotter in the various positions it assumes during the operation of tying a knot in the cord used in binding grain.

30 Similar numerals and letters refer to similar parts throughout the several views.

40 The numeral 1 designates a portion of the frame work of the reaper, or binder, to which my knotter is attached by means of a loop 2 bolted to said frame work.

45 The knotter is composed of two main parts, the sleeve 3 of which is cylindrical in form, and has upon its upper portion, or face, gear-teeth 4. Immediately below these gear-teeth 4 is a diminished portion 5, which is inclosed by the loop 2, previously mentioned.

50 Formed integral with the lower end of the

sleeve 3 is the upper beak 6, which projects approximately at right angles to said sleeve 3. Near the forward point of this beak 6, and upon its lower face, is formed a downwardly pending portion 7, which forms angled faces 8 and 9. To one side of this downwardly pending portion 7, and extending downwardly therefrom, is formed a triangular lip 10.

60 The central bore 11 through the sleeve 3 terminates at the lower point with an enlarged annular bore 12. Located within the bore 11 in the sleeve 3 is a circular arm 13, which arm projects some distance above the cog-teeth on the upper end of said sleeve. Formed on the lower end of this arm 13 is an enlarged annular flange 14, which is normally positioned within the annular bore 12, previously mentioned. Formed integral with the bottom of this flange 14, and extending in a plane at right angles to the arm 13, is a lower beak 15. This beak 15 has a semi-circular lower face 16, and angular upper faces 17 and 18. Formed in one side of the face 17 is a triangular depression 19 identical in size and form with the projecting lip 10, previously mentioned.

75 It may be here stated that the faces 9 and 17 normally lie adjacent to each other and the lip 10 within the depression 19. By such positioning of the parts, the triangular opening, or mouth, 20 is formed between the forward points of the two beaks.

80 Positioned around that portion of the arm 13 that extends above the sleeve 3, and having one end attached to said upper portion and the other end to the upper surface of the sleeve 3, is a coil spring 21, the normal tendency of which is to hold the parts in position, as shown in Figs. 1 and 2.

85 A pin 22 projects from the arm 13 immediately above the upper end of the sleeve 3, and is engaged by a stop, or pin, 23 which projects from the upper end of said sleeve 3.

90 A toothed rack 24, sliding in bearings 25 attached to the frame work 1 of the binder, is pivoted at its forward end to a pitman 26 which is, in turn, connected by means of a crank-pin 27 to a wheel 28. A shaft 29, upon which the wheel 28 is mounted, being rotated necessarily imparts the rotary movement desired to the knotter.

A pin 30 is fixed in the wall of the loop 2, passes through a semi-circular slot 31 in the diminished portion 5 of the sleeve 3, and terminates within a slot 32 in the arm 13, the pin and slots being provided to restrict the relative rotary movement of the sleeve 3 and arm 13.

It is observed that the slot 31 in the sleeve 3 extends through fully a half circle but that the slot 32 in the arm 13 is a quadrant-shaped slot and extends through a quarter circle.

It will further be observed that the pin 30, when the parts are in their normal position in which they are shown in Figs. 1 and 2, occupies a position about at the center of the length of the semi-circular slot 31 and at one end of the quadrant slot 32. This construction I have found to be very simple and effective, as it permits the sleeve 3 to make a quarter turn in one direction before one end of said slot comes in contact with said pin, and a quarter turn in the opposite direction before the opposite end of said slot comes in contact with the opposite side of said pin and at the same time limits the movement of the arm 13 to one quarter of a revolution in each direction before either end of the quadrant slot 32 comes in contact with said pin.

It will be further observed that the parts last mentioned form a very compact arrangement and as they are all securely inclosed or incased, there will be little or no danger of their breakage from contact with exterior objects.

The operation of my improved knoter is as follows: When the needles (not shown) bring the twine around the beaks of the knoter in the position shown in Fig. 6, the wheel 28 revolving pushes the pitman 26 forward in the direction of the arrow "B," and also pushes the rack 24 in the same direction, and thus causes a quarter revolution of the sleeve 3, or to the position as shown in Fig. 7. The arm 13 and lower beak do not revolve in this direction, by reason of the terminus of the slot 32 engaging against the end of the pin 30. As the wheel 28 continues to rotate, it

necessarily follows that the pitman 26 and rack-bar 24 will be drawn in the direction of the arrow "C". The teeth of said rack-bar 24 engaging with the gear-teeth 4 on the sleeve 3 will necessarily rotate the sleeve in the direction indicated by the arrow "D." In the meantime the ends of the twine have passed between the upper and lower beaks, as shown in Fig. 7, and, upon the closing of said beaks, it will be seen that said twine is in the position as shown in Fig. 8. In the continued rotation of the sleeve 3 and the arm 13, those portions of the twine that have been normally held upon the beaks will, by reason of the weight and pull of the bundle, gradually withdraw from said beaks, and assume the position shown in Fig. 9. The knife (not shown) now performs its work, and the bundle can be discharged from the binder. The action of the coil spring 21 is to hold the upper and lower beaks together, and to give the twine the desired tension.

What I claim is—

The combination, in an improved harvester-knotter, of a sleeve and an arm having adjacent beaks at like ends, said arm being mounted to move axially within said sleeve, a spring for retaining said sleeve and arm in relative positions and exerting a torsional strain upon them in opposite directions, said sleeve having a circumferential-slot 31 extending through a half circle, said arm having a circumferential-slot or recess 32 extending through but a quarter of a circle opposite the said slot of said sleeve, a bearing 2 in which said sleeve is mounted, a pin 30 fixed in said bearing and projecting into both of the slots 31 and 32 to restrict the relative rotary movements of said sleeve and arm, and mechanism for rocking said sleeve, substantially as herein specified.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM B. BROWN.

Witnesses:

J. HUNDHAUSEN,
FRANK RUTHERFORD.